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II.—*Observations Météorlogiques et Magnétiques faites dans l'étendue de l'Empire de Russie.* Redigées et publiées par A. T. Kupffer, Membre de l'Acad. de Sci. de St Petersbourg, &c. 4to. 1837. Communicated by Colonel Jackson.

Independently of the reciprocal advantages derived by nations at peace with each other, they not unfrequently confer, by their joint efforts for the advancement of knowledge, a lasting benefit upon mankind; for while commercial interests are sacrificed by those unhappy differences which occasionally sunder the bands that unite them, the scientific truths they have discovered together remain secure from contingencies, imperishable and glorious monuments of the noblest impulse which can actuate nations.

Science, in its higher branches especially, is too frequently regarded as matter of curiosity rather than of utility, but surely we have seen enough of the important results obtained by the application of science, to hail every new discovery as the forerunner of material, tangible benefits. But even were it not so, is not truth lovely in itself? And can there be given to our comprehensive faculties a nobler direction than the investigation of those laws which, emanating from the Great First Cause, maintain the harmony of the universe? Certainly not; and when those laws more immediately affect the planet on which we live, they have a still more powerful claim on our attentive consideration. Of these laws, those which regulate the magnetism of the earth, that occult force, known only by its effects, are of peculiar interest, since by the application of this force we have been enabled to cross the trackless ocean, and draw together in social compact the widely-spread families of mankind.

The variations of the needle, its dip, and the different intensities of the magnetic influence in different places, are so many circumstances which could not fail to awaken attention, as being not only remarkable in themselves, but as materially affecting the value of an instrument to which we owe the discovery of a new world, and which is in daily use, whether for directing our progress to foreign shores, or for correctly delineating the countries we know.

To discover, therefore, the cause of the variations of the needle, and the laws which regulate those variations, so as to determine the exact value of the needle's indications, became a most important desideratum; and it was reserved for Humboldt to add to the other glories of an imperishable name, that of stimulating the leading nations of the world to an exact and systematic observation of the phenomena of terrestrial magnetism. His call has been responded to, and in the work before us we have a valuable proof of what may be effected by a system of observations properly methodised and carefully executed.

The name of M. Kupffer is too well known in connexion with some of the most important physical phenomena of the earth, lately discovered, to require any eulogium here. We shall, therefore, merely give a succinct notice of the work in question. This, as its title indicates, is not confined exclusively to magnetic observations, but embraces meteorology generally; indeed the connexion between the whole range of meteorologic phenomena is so close, they are so mutually modified each by every other, that the independent and unconnected observation of any one would be of little utility. Not only is it necessary to observe simultaneously all the meteorologic and magnetic phenomena at any one station, but similar observations must be made at various places, at the same moment, in the same manner, and with instruments reduced to a common standard of comparison.

This has been effected in Russia, over which extensive empire a great number of observatories have been established:—

"At some of these points," says M. Kupffer in his preface, "both meteorologic and magnetic observations are made; at others only meteorologic. A normal observatory has been founded at St. Petersburg, at the *Institut des Mines*, where a certain number of officers receive the practical instruction requisite to become observers in the establishments in the provinces; detailed instructions are communicated to them, in which a rigorous and uniform system is followed both in the distribution of the hours as well as in the choice of instruments and the method of observing. Eight times a day they observe the atmospheric pressure, the temperature of the air, the humidity of the atmosphere, and the quantity of water which falls either in the form of rain or snow. At some places they also observe, at the same hours, the magnetic dip and variation: the change in the variation is also observed, at certain times of the year, simultaneously with those set on foot in different parts of Europe. It is proposed also to add to these, observations on the temperature of the ground, on atmospheric electricity, and on the intensity of the force of terrestrial magnetism. In each observatory there are, besides the officer specially intrusted with its superintendence, two assistant observers, who live in the observatory, as a single observer would not be sufficient for such a task. These assistants have been formed at the normal observatory at St. Petersburg, where they have passed one or two years in making the same observations, so that they are quite equal to it. That the zeal of the observers may not slacken, they are employed only for a few years, and are from time to time relieved by others who have recently left the normal observatory. This arrangement facilitates the introduction occasionally of improvements in the system of observations."

From such an arrangement the most satisfactory results may be fairly anticipated, and the scientific world will be put in possession of them by successive publications.

The present volume, the first of the series, is divided into two parts; the first contains the necessary instructions for making the observations, and the second the observations made by Mr. Kupffer himself and his assistants at the observatory of St. Petersburg.

The instructions, drawn up by Mr. Kupffer, are divided into two sections: the first is devoted to thermometric, hygrometric, and barometric observations, the direction and strength of the winds, the quantity of rain and snow which falls, and the appearance of the heavens; while the second is exclusively appropriated to observations on the horary variations of the dip of the magnetic needle, the absolute dip, the variations of the declination, and the positive declination. These instructions have the great merit of being lucid, and they embrace all the necessary details except those minute cautions and directions which can only be communicated orally, while teaching the manipulation of the instruments themselves.

The second part of the volume contains, in tabular arrangement, the various meteorologic observations made daily at St. Petersburg, from the 1st July, 1835, to the 30th June, 1836, inclusive. The thermometer, hygrometer, and barometer were each registered eight times a-day; every two hours from 8 A.M. to 10 P.M. inclusive. Observations on the winds and weather were made at the same hours. The quantity of rain or snow fallen was observed twice a-day, at 8 in the morning and at 8 in the evening, excepting in cases of very great rains, when the quantity was observed as soon as they had ceased to fall, and immediately registered as to quantity and time, independently of the regular observations; the snow which fell was thawed. In summer the fall of rain was more frequently observed, on account of the evaporation.

In addition to his observations, Mr. Kupffer has given a set of psychrometric tables, which will be found eminently useful as abridging the calculation of the psychrometric formula. These tables refer to the mode of observing the moisture of the air by two thermometers, the bulb of the one being covered with a wetted muslin; and they are so arranged, that by entering them with the indications of the covered thermometer and the difference between the indications of the two thermometers, the tension of the aqueous vapour in the air is immediately found.

The magnetic observations were not begun till much later, and they are not contained in the present volume.

From the well-known zeal and ability of Mr. Kupffer, his scrupulous attention to exactitude, and unremitting patience, we receive with particular satisfaction the result of his personal observations as data upon which we can confidently rely; and the general direction of the meteorologic and magnetic observations in the Russian empire could not, we feel assured, be placed in better hands.

We cannot, however, close this brief notice without expressing our admiration of the zeal with which the Russian government encourages the investigations of mathematical and physical science. The munificent grants of money, and the assistance of every kind afforded by the emperor for scientific objects, are worthy of a great sovereign, and justly entitle him to the gratitude of all those who, like ourselves, cultivate knowledge as a means of happiness; and we sincerely hope that the joint labours of Russia and England in the field of meteorologic and magnetic research will, from the vast extent of their respective possessions, and the acknowledged ability of their observers, be soon rewarded by a rich harvest of important discoveries.

III.—*Reisebeschreibung nach Arabien und andern umliegenden Ländern.* Von Carsten Niebuhr. 3d band. Hamburg. 1837. 4to.

[*Carsten Niebuhr's Narrative of a Journey to Arabia and other contiguous Countries.* Third vol.] Communicated by the Rev. G. C. Renouard, M.R.A.S.

Of all the acts of royal munificence which have a just claim to the gratitude of mankind, none surely can rank higher than those which are calculated to advance knowledge and promote a friendly intercourse between distant nations. Much of the glory reflected on our own country, and on other European nations, in the most brilliant epochs of their history, is due to the patronage afforded by their sovereigns to expeditions despatched for the purpose of discovering unknown regions; but the moral and scientific value of most of those expeditions was tarnished by one deteriorating ingredient which entered too largely into the motives of their patrons. The lust of wealth and dominion was too plainly the leading principle in the councils of the monarchs who aided Columbus and Gama. Nor was it till the middle of the last century, that Denmark gave the noble example of sending out, at the national expense, a body of travellers for the sole purpose of pursuing scientific inquiries. Frederick V., probably at the suggestion of his excellent minister, Count von Bernstorff, and with the assistance of the celebrated Michaelis, to whom the selection of the persons to be employed was in a great measure left, despatched four young men duly prepared, on a mission to Constantinople, Egypt, and Arabia, for the purpose of ob-